

**IN THE CLAIMS:**

1. (previously presented) A processing system for accessing memory, comprising:  
an address bus for providing a current address and a previous address to memory, wherein  
the current address follows the previous address without any intervening addresses;  
a data bus for receiving information from memory; and  
first means for generating a first sequence signal that when negated indicates that the  
current address may not be sequential to the previous address, a second sequence  
signal that when negated indicates that the current address is not sequential to the  
previous address, and a third sequence signal that when negated indicates that the  
current address, if it is an instruction address, is not sequential to an immediately  
preceding instruction address and when asserted indicates that the current address, if  
it is an instruction address, is sequential to the immediately preceding instruction  
address.
2. (original) The processing unit of claim 1, wherein if the current address is not sequential to  
the previous address, the first sequence signal is negated prior to the second sequence signal  
being negated.

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3. (previously presented) A processing system for accessing memory, comprising:  
an address bus for providing a current address and a previous address to memory, wherein  
the current address follows the previous address without any intervening addresses;  
a data bus for receiving information from memory;  
an execution unit which generates branch conditions and data addresses;  
a decode control unit which decodes instructions; and  
a fetch unit, coupled to the execution unit, the decode control unit, the address bus, and the  
data bus, for generating a first sequence signal that when negated indicates that the  
current address may not be sequential to the previous address, a second sequence  
signal that when negated indicates that the current address is not sequential to the  
previous address, and a third sequence signal that when negated indicates that the  
current address, if it is an instruction address, is not sequential to an immediately  
preceding instruction address and when asserted indicates that the current address, if  
it is an instruction address, is sequential to the immediately preceding instruction  
address.
4. (Original) The processing system of claim 3, wherein the decode control unit comprises an  
instruction register.
5. (previously presented) The processing system of claim 3, wherein the fetch unit comprises:  
an address control unit, coupled to the decode control unit and the execution unit, for  
receiving a branch condition signal from the execution unit and a branch decode  
signal and a load/store signal from the decode unit and for providing the first,  
second, and third sequence signals.
6. (Original) The processing system of claim 5, wherein the execution unit comprises a  
condition generator that provides the branch condition signal.
7. (Original) The processing system of claim 6, wherein the execution unit comprises a data  
address generator which provides a data address signal to the fetch unit.

8. (Original) The processing system of claim 7, wherein if the current address is not sequential to the previous address, the first sequence signal is negated prior to the second sequence signal being negated.
9. (previously presented) The processing system of claim 3, wherein if the current address is not sequential to the previous address, the first sequence signal is negated prior to the second sequence signal being negated.
10. (previously presented) A processing system for fetching instructions and data, comprising:  
an address bus for providing a current address for retrieving a first instruction, a previous address for retrieving a second instruction, and a data address for retrieving data, wherein the data address occurs before the current address and after the previous address, and wherein the current address follows the previous address without any intervening addresses for retrieving instructions;  
a data bus for retrieving the first and second instructions and the data; and  
a fetch unit, coupled to the address bus and the data bus, for generating a first sequence signal that when asserted for the current address indicates that the current address is sequential to the previous address and when negated indicates that the current address may not be sequential to the previous address.
11. (Original) The processing system of claim 10, wherein the fetch unit comprises:  
an address control unit for receiving a branch condition, a branch decode signal, and a load/store signal and for providing the first sequence signal.
12. (previously presented) The processing system of claim 11, further comprising:  
an execution unit which provides the branch condition; and  
a decode control unit which provides the branch decode signal and the load/store signal.

13. (previously presented) A processing system comprising:
  - an execution unit;
  - a decode control unit;
  - a fetch unit, coupled to the execution unit and the decode unit, for providing addresses on an address bus which may be sequential, and providing a first sequence signal and a second sequence signal for each address provided on the address bus wherein the first sequence signal indicates whether each address provided on the address bus may be sequential to an immediately preceding address on the bus and a second sequence signal that indicates whether each address provided on the bus is sequential to the immediately preceding address on the bus.
14. (currently amended) The processing system of claim 13, wherein if the second sequence signal corresponding to one of the addresses indicates that ~~an~~ the address is not sequential to the immediately preceding address, the first sequence signal corresponding to the address indicates that the address may not be sequential to the immediately preceding address prior to the second sequence signal indicating that the address is not sequential to the immediately preceding address.
15. (previously presented) The processing system of claim 14, wherein the addresses may be instruction addresses, and wherein the fetch unit further provides a third sequential signal which indicates whether each address that is an instruction address is sequential to a previous instruction address.
16. (Original) The processing unit of claim 15, wherein the execution unit comprises a condition generator that provides a branch condition signal to the fetch unit.
17. (Original) The processing unit of claim 16, wherein the decode control unit provides a branch decode signal and a load/store signal to the fetch unit.

18. (previously presented) A processing unit comprising:
  - an execution unit;
  - a decode control unit;
  - a fetch unit, coupled to the execution unit and the decode unit, for providing instruction and data addresses on an address bus and providing a first sequence signal that indicates whether each instruction address provided on the address bus is sequential to an immediately preceding instruction address even if a data address is provided between the instruction address and the immediately preceding instruction address.
19. (Original) The processing unit of claim 18, wherein the execution unit comprises a condition generator that provides a branch condition signal to the fetch unit.
20. (Original) The processing unit of claim 19, wherein the decode control unit provides a branch decode signal and a load/store signal to the fetch unit.
21. (previously presented) The processing unit of claim 2, wherein the second sequence signal is negated in response to resolving a branch condition code.
22. (previously presented) The processing system of claim 14, wherein the second sequence signal is provided in response to resolving a branch condition code.
23. (previously presented) The processing unit of claim 2, wherein if the current address is not sequential to the previous address, the first and second sequence signals are negated during a same clock cycle.

24. (previously presented) A processing system for accessing memory, comprising:  
an address bus for providing a current address and a previous address to memory;  
a data bus for receiving information from memory;  
an execution unit which generates branch conditions and data addresses;  
a decode control unit which decodes instructions; and  
a fetch unit, coupled to the execution unit, the decode control unit, the address bus, and the data bus, for generating a first sequence signal that when negated indicates that the current address may not be sequential to the previous address, a second sequence signal that when negated indicates that the current address is not sequential to the previous address, and a third sequence signal that when negated indicates that the current address, if it is an instruction address, is not sequential to the previous address that was an instruction address, wherein if the current address is not sequential to the previous address, the first sequence signal is negated prior to the second sequence signal being negated and the first and second sequence signals are negated in a same clock cycle.

25. (previously presented) The processing system of claim 14, wherein if the second sequence signal indicates that an address is not sequential to the immediately preceding address, the first signal indicates that the address may not be sequential to the immediately preceding address in a same clock cycle as the second sequence signal indicating that the address is not sequential to the immediately preceding address.

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